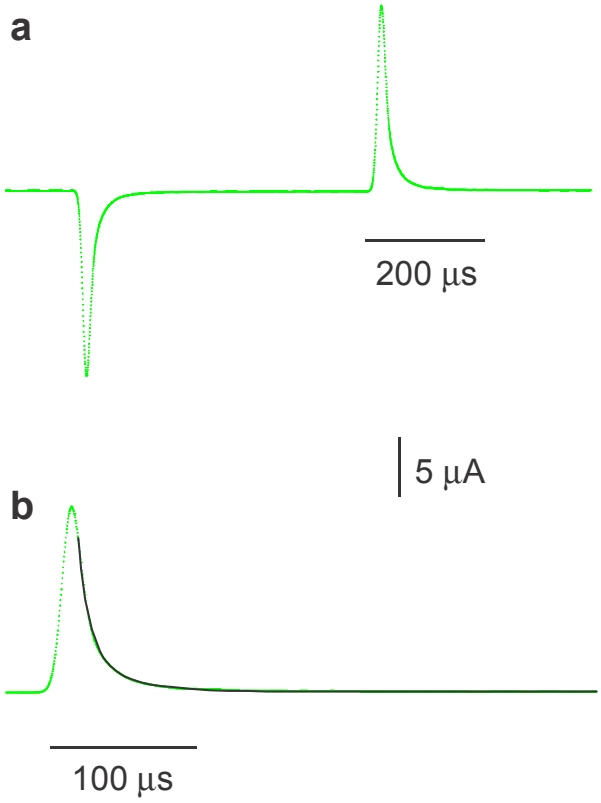
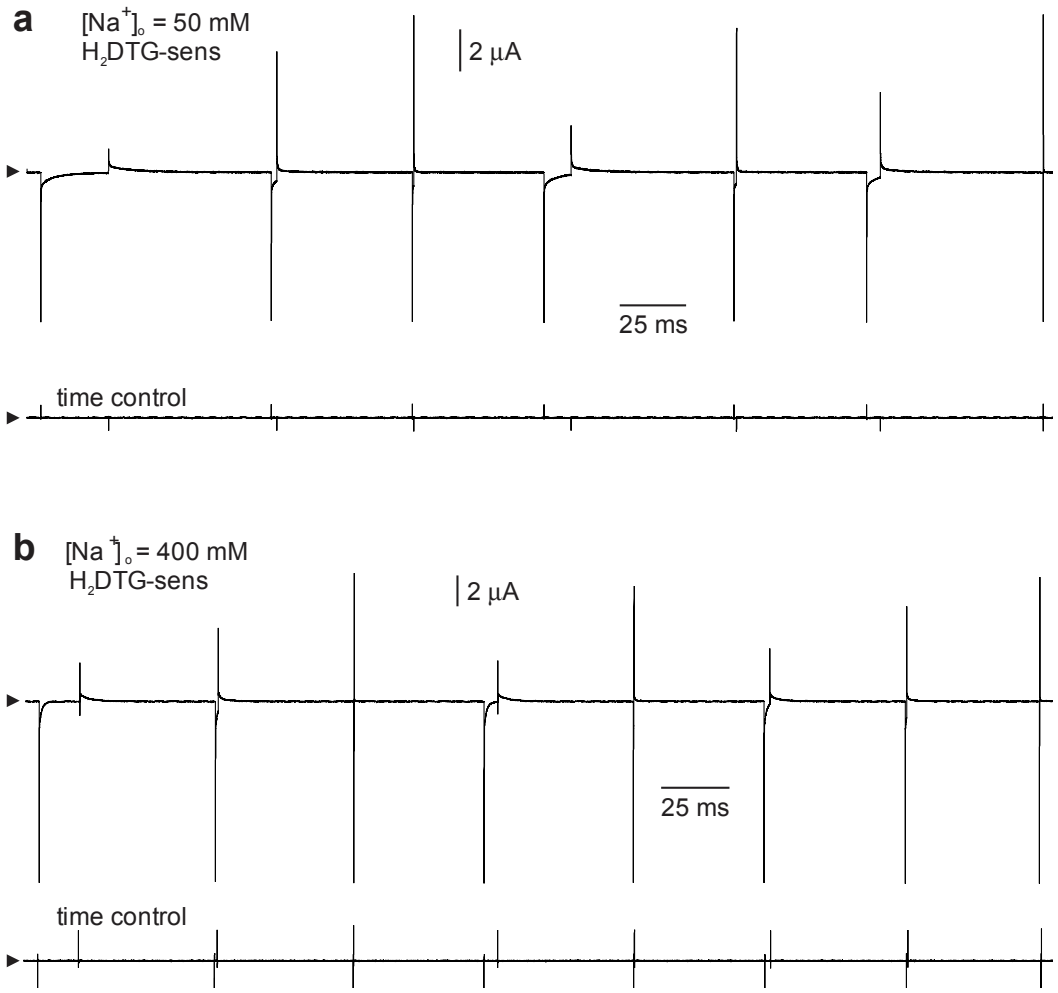
The dynamic relationships between the three events that release individual Na^+ ions from the Na^+/K^+-ATPase.

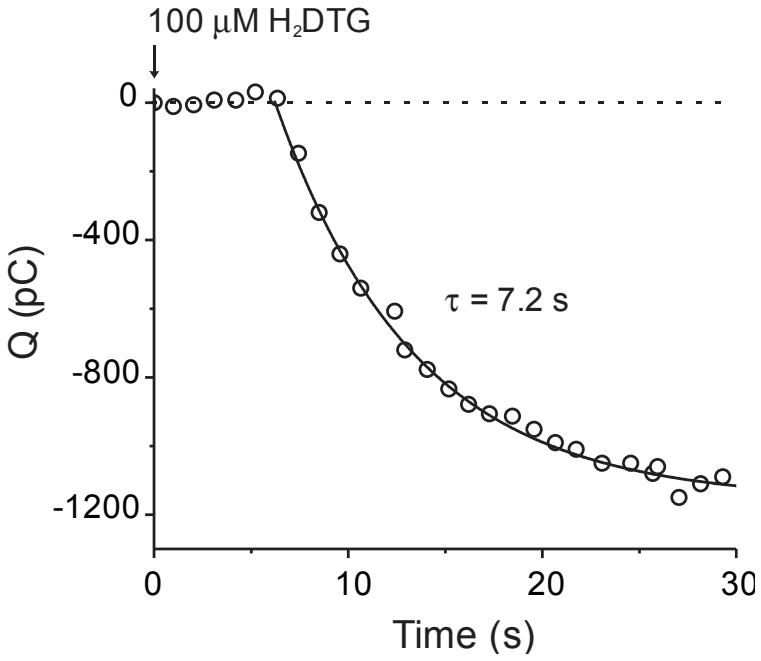
Gadsby, Bezanilla, Rakowski, De Weer & Holmgren



Supplementary Figure S1. Speed of squid giant axon membrane voltage clamp. (a) Capacitance current transient from a representative axon in response to a 4 mV voltage step made after H_2DTG had been applied. **(b)** OFF membrane capacitance transient. The solid line represents a two-exponential fit to the current decay: the super-fast component, with a time constant of 7.46±0.05 µs, was followed by a slower decay with 28.0±0.3 µs time constant. All axons studied had similarly fast membrane capacitance transients.



Supplementary Figure S2. H_2DTG-sensitive currents. H_2DTG-sensitive current traces, and corresponding time controls, from the experiments summarized in Figure 5 with $[Na^+]_o$=50 mM (**a**), and $[Na^+]_o$=400 mM (**b**). Time control error signals were consistently slightly larger at higher $[Na^+]_o$. These signals were assessed before application of H_2DTG and likely reflect small changes in membrane capacitance current over time, perhaps due to changes in series resistance within the Frankenhäuser-Hodgkin space[22]. In any case, they last only ~20-40 µs and represent <10% of the maximum Q_f; all values of Q_f were corrected for these errors.



Supplementary Figure S3. H_2DTG action. Charge moved by the Na^+/K^+ pump was estimated by numerical integration of H_2DTG-sensitive currents in response to a 5 ms voltage step to -140 mV, from a holding potential of 0 mV, applied every ~1 s. H_2DTG (valve switched at arrow) takes ~6 s to reach the axon. The solid line represents a single exponential fit to the time course of H_2DTG-induced loss of charge. From 4 experiments, the mean τ for 100 μM H_2DTG action was 6.7 ± 0.3 s. Two additional experiments using 50 μM H_2DTG gave similar results (τ = 7.5 ± 0.1 s).